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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,985	02/28/2001	Kyogo Itoh	0020-4817P	3467

2292 7590 01/07/2003

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EXAMINER
HELMS, LARRY RONALD

ART UNIT	PAPER NUMBER
1642	13

DATE MAILED: 01/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/763,985	ITOH ET AL.	
	Examiner	Art Unit	
	Larry R. Helms	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-34* is/are pending in the application.

4a) Of the above claim(s) *6-18 and 21-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-5,19,21 and 32-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *1,5,8,9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-5, 19 and 7-8 and 21 in part in Paper No. 11 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 6, 9-18, 20, 22-31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 11.

3. Claims 1-2 have been canceled.

Claims 3-4, 7-8, 19, 21, 23, 25-26 and 32 have been amended. Claims 19 and 32 were amended in the amendment filed 10/22/02.

Claims 32-34 have been added.

4. Claims 3-5, 7-8, 19, 21, 32-34 are under examination.

Specification

5. The disclosure is objected to because of the following informalities:

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code, such as for example on pages 21, 29, and 66. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code throughout the application. See MPEP § 608.01.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 3-5, 7-8, 19, 21, 23-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claim 32 and those dependent from claim 32 are indefinite for reciting "wherein said polynucleotide encodes a tumor antigen protein" in claim 32 part (c) because the exact meaning of the phrase is not clear. It is not clear which polynucleotide encodes a tumor antigen is it that in part (c) or those in parts (a) or (b).

b. Claim 19 and those that depend from claim 19 are indefinite for reciting "peptide fragments of the protein" in claim 19 because the exact meaning of the phrase is not clear. It is not clear if the peptide fragments are the entire protein encoded by the DNA encoding SEQ ID NO:2 or SEQ ID NO:1 or are only the fragments in part (c).

c. Claim 33 is indefinite for reciting "at least one of the nucleic acids of claim 19" because claim 19 only has one nucleic acid.

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 3-5, 7-8, 19, 21, 32-34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to polynucleotides which hybridizes with a polynucleotide of (a) to (b) under stringent conditions wherein the polynucleotide encodes a tumor antigen protein (see claim 32). While the amino acid sequence of SEQ ID NO:2 and the polynucleotide sequence of SEQ ID NO:1 are adequately described in the specification as-filed, thereby providing an adequate basis for the polypeptide of SEQ ID NO:2 and the polynucleotide of SEQ ID NO:1; there is insufficient written description as to the identity of a polynucleotide that hybridizes to the DNA encoding SEQ ID NO:2 or SEQ ID NO:1 and encodes a tumor antigen protein. Consequently, the specification does not provide an adequate written description of a polynucleotide that hybridizes to the DNA encoding SEQ ID NO:2 or SEQ ID NO:1 and encodes a tumor antigen protein.

The specification as filed does not provide adequate written description support for a polynucleotide that hybridizes to the DNA encoding SEQ ID NO:2 or SEQ ID NO:1 and encodes a tumor antigen protein. Thus a broad genus having potentially highly diverse sequences and functions (the specification discloses a method for identifying tumor antigen peptides on page 22, lines 18-26, however, the specification discloses "if the candidate induces CTL...it is indicated that the particular candidate peptide may function as a tumor antigen peptide") is encompassed by the phrase and conception

cannot be achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method. The specification indicates that the candidate "may" function as a tumor antigen but the specification does not set forth a definitive definition or activity or function that is readily screenable to determine a tumor antigen. Adequate written description requires more than a mere statement that it is part of the invention. The sequence itself is required. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016.

Therefore, only a polypeptide that encodes SEQ ID NO:2 and SEQ ID NO:1 meets the written description provision of 35 U.S.C. 112, first paragraph. Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the written description inquiry, whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.). Consequently, Applicant was not in possession of the instant claimed invention. See University of California v. Eli Lilly and Co. 43 USPQ2d 1398.

Applicant is directed to the Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

Applicant is invited to point to clear support or specific examples of the claimed invention in the specification as-filed.

10. Claims 3-5, 7-8, 19, 21, 32-34 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Factors to be considered in determining whether undue experimentation is required, are summarized in Ex parte Forman, 230 USPQ 546 (BPAI 1986). They include the nature of the invention, the state of the prior art, the relative skill of those in the art, the amount of direction or guidance disclosed in the specification, the presence or absence of working examples, the predictability or unpredictability of the art, the breadth of the claims, and the quantity of experimentation which would be required in order to practice the invention as claimed.

The claims are broadly drawn to polynucleotides which encode SEQ ID NO:2 or polynucleotides of SEQ ID NO:1 or polynucleotides which hybridize with the polynucleotide encoding SEQ ID NO:2 or the polynucleotide of SEQ ID NO:1 and expression plasmids comprising such and transformants comprising such and pharmaceutical compositions comprising polynucleotides encoding SEQ ID NO:2 or SEQ ID NO:1 or polynucleotides which hybridize with the polynucleotide encoding SEQ ID NO:2 or the polynucleotide of SEQ ID NO:1 and pharmaceutical compositions for the treatment or prevention of tumors with compositions comprising polynucleotides encoding SEQ ID NO:2 or SEQ ID NO:1 or polynucleotides which hybridize with the polynucleotide encoding SEQ ID NO:2 or the polynucleotide of SEQ ID NO:1.

While the specification discloses how to make SEQ ID NO:1 and SEQ ID NO:2 the specification does not teach how to use the claimed invention. The specification contemplates the use of the polynucleotides in cancer vaccines for the treatment and prevention of tumors (see page 15-16), however the specification does not teach the intended use of the polynucleotides for treatment or prevention of tumors.

The specification provides no exemplification of or guidance on how to use the claimed vaccine formulation or antigen for activity immunotherapy in humans for prevention or treatment of tumors. The specification does not enable prevention of tumor and does not exemplify any such methods. The goal of tumor vaccination is the induction of tumor immunity to prevent tumor recurrence and to eliminate residual disease. However, Ezzell (J. NIH Res, 1995, 7:46-49) reviews the current thinking in cancer vaccines and states that tumor immunologists are reluctant to place bets on which cancer vaccine approach will prove effective in the long run (see the entire document, particularly last paragraph) and further states that no one is very optimistic that a single peptide will trigger an immune response strong enough to eradicate tumors or even to prevent the later growth of micrometastases among patients whose tumors have been surgically removed or killed by radiation or chemotherapy (p 48, para 6). In addition, Spitler (Cancer Biotherapy, 1995, 10:1-3) recognizes the lack of predictability of the nature of the art when she states that "Ask practicing oncologists what they think about cancer vaccines and you're likely to get the following response: "cancer vaccines don't work". Ask a venture capitalist or the director of product development at a large pharmaceutical company and you're likely to get the same response." (p 1, para 1).

Furthermore, Boon (Adv Can Res, 1992, 58:177-210) teaches that for active immunization in human patients we have to stimulate immune defenses of organisms that have often carried a large tumor burden. Establishment of immune tolerance may therefore have occurred and it may prevent immunization and several lines of evidence suggest that large tumor burdens can tolerize or at least depress the capability to respond against the tumor (p. 206, para 2). There is no suggestion in the specification that the expression of these antigens from the polynucleotide has resulted in autoantibodies against the antigen thus it would be highly unpredictable that administration of the polynucleotide that encodes the antigen as a cancer vaccine, into patients would lead to an effective immune response against the tumor. In addition, Gaiger et al (Blood 96:1480-1489, 2000) teach that immunization with a tumor antigen WT1 did not show any effects on tumor growth in vivo 9see abstract).

In addition, claim 32 recites a polynucleotide that hybridizes with (a) or (b) which encodes a tumor antigen protein. The specification does not teach how to identify a tumor antigen (see above 112 first rejection) and as such one would not know how to use polynucleotides that hybridize to SEQ ID NO:1 or hybridize to polynucleotides that encode SEQ ID NO:2 for treatment or prevention of tumors. In addition, the function of binding to HLA antigen and are recognized by cytotoxic T lymphocytes are not a function that is specific to the protein (see claims 19 and 32).

Therefore, due the unpredictability of cancer vaccines in general, as evidenced by Ezzell, Spitler, Gaiger and Boon and in view of the insufficient guidance and/or working examples concerning the use the claimed polypeptides as vaccines, one skilled

in the art would not know how to practice the broadly claimed invention without undue experimentation.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 7-8, 19, 21, 23, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagase et al (DNA Res. 2:167-174, 1995).

The claims recite a polynucleotide encoding SEQ ID NO:2 or hybridizing to SEQ ID NO:2 which is a tumor antigen protein and polynucleotides which encode a tumor antigen wherein the tumor antigen protein gives rise to peptide fragments and bind to HLA antigen and are recognized by cytotoxic T lymphocytes and compositions comprising such. For this rejection the intended use of a pharmaceutical composition and pharmaceutical composition for treatments or prevention of tumor is given no patentable weight.

Nagase et al teach a protein identical to SEQ ID NO:2 and DNA encoding SEQ ID NO:2 (see Table 1 for KIAA0156 (see the attached sequence alignment on the back of this Office Action). The polynucleotide of Nagase et al would hybridize to SEQ ID NO:1 or the polynucleotide encoding SEQ ID NO:2 under the recited conditions and since the protein of Nagase et al is identical to SEQ ID NO:2 of the instant application, it

would be inherent that the protein of Nagase et al would give peptides that would bind to HLA antigen and be recognized by cytotoxic T lymphocytes.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 3-5, 7-8, 19, 21, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagase et al (DNA Res. 2:167-174, 1995) as applied to claims 7-8, 19, 21, 32-33 above, and further in view of Campbell (Monoclonal antibody technology, Elsevier Science Publishers, Chapter 1, pages 1-32) and Sambrook et al (Molecular Cloning, A Laboratory Manual, Chapters 3 and 12, 1989).

Claims 7-8, 19, 21, 32-33 have been described supra. Claims 3-5, and 34 recite an expression plasmid with the polynucleotide and a transformant transformed with the expression plasmid and a method of producing the protein.

Nagase et al has been described supra. Nagase et al does not teach an expression plasmid or a transformant with the expression plasmid. This deficiency is made up for in the teachings of Campbell and Sambrook et al.

Campbell teach that it is customary now for any group working on a macromolecule to both clone the genes coding for it an make monoclonal antibodies to it for basic research (see page 29).

Sambrook et al teach expression plasmids and host cells for expression of proteins.

It would have been prima facie obvious to one of ordinary skill in the art at the time the claimed invention was made to have placed the DNA of Nagase et al in an expression plasmid to produce the protein.

One of ordinary skill in the art would have been motivated to and had a reasonable expectation of success to have placed the DNA of Nagase et al in an expression plasmid to produce the protein because Campbell teach it is customary now

for any group working on a macromolecule to both clone the genes coding for it an make monoclonal antibodies to it for basic research (see page 29). In addition, one of ordinary skill in the art would have been motivated to and had a reasonable expectation of success to have placed the DNA of Nagase et al in an expression plasmid to produce the protein because Sambrook et la teach expression vectors and methods of expression of the DNA for structural and biochemical analysis (see page 16.2). Thus, It would have been prima facie obvious to one of ordinary skill in the art at the time the claimed invention was made to have placed the DNA of Nagase et al in an expression plasmid to produce the protein because it is routinely done in basic research to further characterize the protein.

Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Conclusion

11. No claim is allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Larry R. Helms, Ph.D, whose telephone number is (703) 306-5879. The examiner can normally be reached on Monday through Friday from 7:00 am to 4:30 pm, with alternate Fridays off. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be

reached on (703) 308-3995. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

13. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 308-4242.

Respectfully,

Larry R. Helms Ph.D.

703-306-5879

17	243	4.9	557	10	Q9FVQ1	Q9fvq1 arabidopsis
18	241.5	4.8	1009	5	Q9VAT3	Q9vat3 drosophila
19	239.5	4.8	960	4	Q96E42	Q96e42 homo sapien
20	238.5	4.8	960	4	Q9BPY6	Q9bpy6 homo sapien
21	236.5	4.7	673	10	Q9FNM3	Q9fnm3 arabidopsis
22	234	4.7	836	4	Q9NYD8	Q9nyd8 homo sapien
23	234	4.7	848	4	Q9BZJ1	Q9bzj1 homo sapien
24	233.5	4.7	476	5	Q27199	Q27199 tetrahymena
25	232	4.6	690	11	Q9CQC1	Q9cqc1 mus musculu
26	231.5	4.6	724	3	Q9HF03	Q9hf03 cryptococcu
27	229.5	4.6	675	10	Q9LK51	Q9lk51 arabidopsis
28	226	4.5	575	3	Q9Y7A8	Q9y7a8 neurospora
29	225	4.5	687	4	Q9BZJ2	Q9bzj2 homo sapien
30	224	4.5	836	4	Q9NQH5	Q9nqh5 homo sapien
31	222.5	4.5	599	10	Q9SD35	Q9sd35 arabidopsis
32	219.5	4.4	717	11	Q99LI7	Q99li7 mus musculu
33	217	4.3	564	4	Q9GZW7	Q9gzw7 homo sapien
34	216.5	4.3	708	4	Q96QD6	Q96qd6 homo sapien
35	216.5	4.3	717	4	Q12996	Q12996 homo sapien
36	215	4.3	733	3	O14233	O14233 schizosacch
37	214.5	4.3	611	10	Q41042	Q41042 pisum sativ
38	212.5	4.3	524	4	Q14498	Q14498 homo sapien
39	212.5	4.3	594	5	Q9VM49	Q9vm49 drosophila
40	212.5	4.3	883	5	Q9V6S4	Q9v6s4 drosophila
41	211	4.2	495	10	Q9ASP6	Q9asp6 arabidopsis
42	211	4.2	635	10	Q40363	Q40363 medicago sa
43	210	4.2	1456	5	Q9V587	Q9v587 drosophila
44	209.5	4.2	530	4	Q14499	Q14499 homo sapien
45	209	4.2	1022	10	Q9FL22	Q9fl22 arabidopsis

ALIGNMENTS

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AC   Q15020;
DT   01-NOV-1996 (TrEMBLrel. 01, Created)
DT   01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT   01-JUN-2001 (TrEMBLrel. 17, Last annotation update)
DE   ORF.
OS   Homo sapiens (Human).
OC   Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC   Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
OX   NCBI_TaxID=9606;
RN   [1]
RP   SEQUENCE FROM N.A.
RX   MEDLINE=96127530; PubMed=8590280;
RA   Nagase T., Seki N., Tanaka A., Ishikawa K., Nomura N.;
RT   "Prediction of the coding sequences of unidentified human genes. IV.
RT   The coding sequences of 40 new genes (KIAA0121-KIAA0160) deduced by
RT   analysis of cDNA clones from human cell line KG-1.";
RL   [redacted]
RN   [redacted]
RP   SEQUENCE FROM N.A.
RA   Itoh K., Yang D., Sasatomi T., Nakao M., Shichijo S., Takasu H.,
RA   Matsumoto H., Mori K., Yamana H.;
RT   "SART-3 (Squamous cell carcinoma antigen recognized by T cells).";
RL   Submitted (DEC-1998) to the EMBL/GenBank/DDBJ databases.
DR   EMBL; D63879; BAA09929.1; -.
DR   EMBL; AB020880; BAA78384.1; -.
DR   HSSP; P09012; 2U1A.
DR   InterPro; IPR003107; HAT.
DR   InterPro; IPR000504; RRM.
DR   Pfam; PF00076; rrm; 2.
DR   SMART; SM00386; HAT; 6.
DR   SMART; SM00360; RRM; 2.
DR   PROSITE; PS50102; RRM; 2.
DR   PROSITE; PS00030; RRM_RNP_1; UNKNOWN_2.
SQ   SEQUENCE   963 AA;  109934 MW;  06B26CEB8B19102A CRC64;
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Query Match 100.0%; Score 4994; DB 4; Length 963;
Best Local Similarity 100.0%; Pred. No. 1.2e-298;
Matches 963; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy      61 GVSESDGDEYAMASSAESSPGEYEWEYDEEEEKNQLEIERLEEQLSINVYDYNCHVDLIR 120
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Qy     121 LLRLEGELTKVRMARQKMSEIFPLTEELWLEWLHDEISMAQDGLDREHVYDLFEKAVKDY 180
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Qy     181 ICPNIWLEYGQYSVGGIGQKGGLEKVRSVFERALSSVGLHMTKGLALWEAYREFESAIVE 240
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Qy     241 AARLEKVHSLFRRQLAIPLYDMEATFAEYEEWSEDPIPESVIQNYNKALQQLEKYKPYEE 300
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Db     241 AARLEKVHSLFRRQLAIPLYDMEATFAEYEEWSEDPIPESVIQNYNKALQQLEKYKPYEE 300

Qy     301 ALLQAEAPRLAEYQAYIDFEMKIGDPARIQLIFERALVENCLVPDLWIRYSQYLDRQLKV 360
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Db     301 ALLQAEAPRLAEYQAYIDFEMKIGDPARIQLIFERALVENCLVPDLWIRYSQYLDRQLKV 360

Qy     361 KDLVLSVHNRAIRNCPWTVALWSRYLLAMERHGVDHQVISVTFEKALNAGFIQATDYVEI 420
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Db     361 KDLVLSVHNRAIRNCPWTVALWSRYLLAMERHGVDHQVISVTFEKALNAGFIQATDYVEI 420

Qy     421 WQAYLDYLRRRVDFKQDSSKELEELRAAFTRALEYLKQEVEERFNESGDPSCVIMQNWAR 480
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Db     421 WQAYLDYLRRRVDFKQDSSKELEELRAAFTRALEYLKQEVEERFNESGDPSCVIMQNWAR 480

Qy     481 IEARLCNNMQKARELWDSIMTRGNAKYANMWLEYYNLERAHGDTQHCRKALHRAVQCTSD 540
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RESULT   2
D63879
LOCUS       D63879                  3660 bp    mRNA    linear   PRI 06-OCT-2001
DEFINITION  Human mRNA for KIAA0156 gene, complete cds.
ACCESSION   D63879
VERSION     D63879.1  GI:961449
KEYWORDS    KIAA0156.
SOURCE      Homo sapiens male myeloblast cell_line:KG-1 cDNA to mRNA.
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
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REFERENCE   1  (bases 1 to 3660)
  AUTHORS   Nagase,T., Seki,N., Tanaka,A., Ishikawa,K. and Nomura,N.
  TITLE     Prediction of the coding sequences of unidentified human genes. IV.
            The coding sequences of 40 new genes (KIAA0121-KIAA0160) deduced by
            analysis of cDNA clones from human cell line KG-1
  JOURNAL   [redacted]
  MEDLINE   96127530
REFERENCE   2  (bases 1 to 3660)
  AUTHORS   Ohara,O., Nagase,T., Kikuno,R. and Nomura,N.
  TITLE     Direct Submission
  JOURNAL   Submitted (11-AUG-1995) Osamu Ohara, Kazusa DNA Research Institute;
            1532-3, Yana, Kisarazu, Chiba 292-0812, Japan
            (E-mail:cdnainfo@kazusa.or.jp, Tel:+81-438-52-3913)
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                     QDGLDREHVYDLFEKAVKDYICPNIWLEYGQYSVGGIGQKGGLEKVRSVFERALSSVG
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BASE COUNT      986 a    824 c   1049 g    801 t
ORIGIN


  Query Match             96.3%;  Score 3656.8;  DB 9;  Length 3660;
  Best Local Similarity   99.9%;  Pred. No. 0;
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Qy      12 atggcgactgcggccgaaacctcggcttcagaacccgaggctgagtccaaggctgggccc 71
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Qy     252 ggggagtacgagtgggaatatgacgaagaggaggagaaaaaccagctggagattgagaga 311
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Qy     432 atctttcccttgactgaagagctctggctggagtggctgcatgacgagatcagcatggcc 491
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Qy     492 caggatggcctggacagagagcacgtgtatgacctctttgagaaagccgtgaaggattac 551
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Db     481 CAGGATGGCCTGGACAGAGAGCACGTGTATGACCTCTTTGAGAAAGCCGTGAAGGATTAC 540

Qy     552 atttgtcctaacatttggctagagtatggccagtactcagttggtgggattggtcagaaa 611
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Qy     612 ggtggccttgagaaagttcgctccgtgtttgaaagggctctctcgtctgttggtttacat 671
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Qy    125 gttatcgcgggctgtggccgctgcgacatacaagaccatggggccagcgtgggatcagca 184
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Db    188 GGAGGAAGGCGTGAGCGAGAGCGATGGGGATGAGTACGCCATGGCTTCCTCCGCGGAGAG 247

Qy    245 ctcccccggggagtacgagtgggaatatgacgaagaggaggagaaaaaccagctggagat 304
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db    248 CTCCCCCGGGGAGTACGAGTGGGAATATGACGAAGAGGAGGAGAAAAACCAGCTGGAGAT 307

Qy    305 tgagagactggaggagcagttgtctatcaacgtctatgactacaactgccatgtggactt 364
          ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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